FINAL REPORT

Fall Mission: November 1, 2006 – December 22, 2006

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"Conservation and Documentation of the Wall Paintings at the Red Monastery, Sohag"

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INTRODUCTION

During the autumn of 2006 a conservation campaign was conducted in the north and south conches of the church. A number of test cleanings were also carried out in the left transept. The work in the first tier of the north conch was completed, including that on the five granite columns, and work was carried out on the upper tiers of the south conch, more specifically in the whole area beneath the dome, the clerestory, the triumphal arch, the apse and part of the level with the niches in the second tier. In addition, three areas in the left transept were cleaned in preparation for work to be carried out during subsequent missions. One of these was on the north wall, level with the horse's head and the Coptic inscription appearing on the top right-hand side, beyond the cornice.

Work still outstanding includes some consolidation work on the curved face of the apse in the south conch (requiring a longer period of time), the cleaning of a hitherto unconserved square in the central area and the completion of the process of aesthetic presentation. Our achievements during this mission are therefore in accordance with the work schedule drawn up during earlier campaigns[1].

During this phase, we tackled the delicate issue of removing old repairs carried out using mortar[2] not structurally compatible with the original mortar. These repairs were concentrated particularly in the central part of the apse and the area around the conch where structural instability over time has resulted in irreversible deformation, cracks and

[1] Campaigns of December 2002 (cf. A. Luzi, L. De Cesaris, *RED MONASTERY- Monastery of St. Bishoi, December 2002- Cleaning Survey Mission*) and March–April 2003.
[2] These are deep repairs with the following stratigraphy: vegetable fiber with animal glue, gypsum, cement, gypsum.

fractures. *(Fig. 1)* (cf. graphic[3]).

Fig. 1

Our approach to this phase took account of the following criteria: recovery of the painted areas covered by old pointing (the flat areas of painted plaster adjacent to the small columns in the clerestory, the entire area above the triumphal arch and, inside the apse, all the surfaces adjacent to fractures filled in during earlier work; in the north conch, some parts of the square pilasters and the lower part of the small decorated arch on the access door to the north transept); repairs using appropriate mortar in the areas where the removal of the old mortar used in restoration proved unavoidable and aesthetic treatment involving chemical and mechanical cleaning of that mortar which, for reasons of conservation, could

[3] The graphics for this campaign and the architectural survey which will allow a definitive exposition of the constituent materials will be available in April 2007.

be left *in situ* (all of the triumphal arch and the area above it (*Fig.2)*.

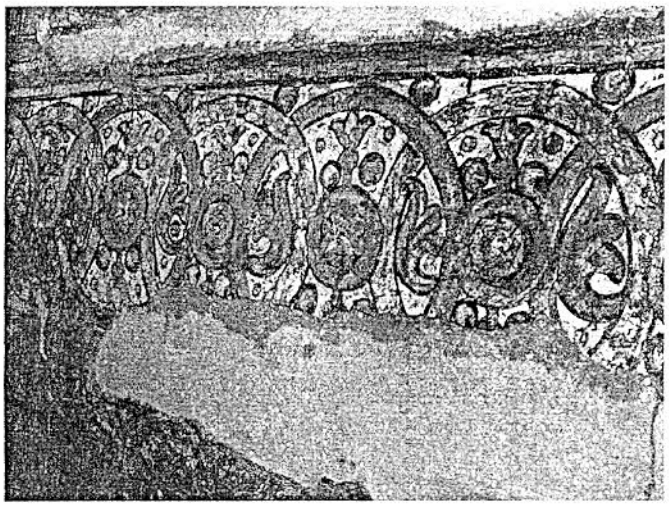

Fig.2

This work enabled us to restore the static equilibrium and continuity of the original mortar and, at the same time, present a clear interpretation of the various levels of the palimpsest. The woodwork supporting the architraves, entirely the work of earlier restorers (in the south conch, level with the two central niches of the second tier and in the north conch on the pilasters of the first tier), was cleaned and treated in an effort to present it aesthetically as part of the equilibrium reached during the work on the paintings and plaster.

Drawings of the decorative scheme of the ground floor in the north conch, the clerestory, the external arch and the apse of the south conch were completed within the scope of this work.

WORKING METHOD

Architectural structure

We are able to confirm the findings of our earlier work[4] with regard to the architectural structure. Ever since we began work in 2003, we have been aware that the original architraves of the windows were replaced in antiquity with new blocks of limestone *(Fig. 3)*.

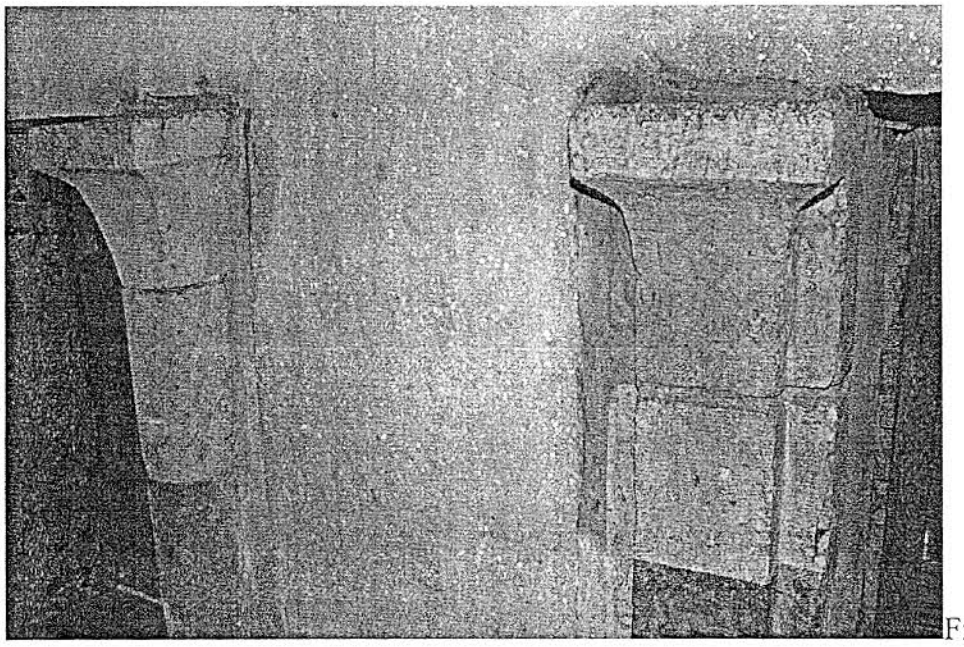
Fig.3

In the area above, all the masonry between the architraves and the impost of the dome was repaired in antiquity.

Plaster

[4] L. De Cesaris and A. Luzi, Red Monastery, Monastery of St. Bishoi Conservation of the Wall Paintings - Technical Report - Third mission, 10/04/2003–11/10/2003

We are able to confirm the findings of our earlier work with regard to the plaster. The chance to work simultaneously on different tiers of the church has enabled us to examine closely the way in which the plaster was applied.

We can state with some confidence that the plaster used in the clerestory, for the smaller figures revealed in the area of the triumphal arch and for the niches in the second tier, shares the same characteristics. It is lime-based with inclusions of quartz sand that have very rounded, spherical[5] grains. This plaster, approximately 1 cm thick (*Fig.4)*, may be linked to that

Fig 4

[5] See: Artelab s.r.l, Study of the constituent materials and techniques used to carry out the various phases of wall painting (September 2005)

defined in the previous report as being applied during the third phase[6], that is, the phase of decoration preceding the *Virgo Lactans* or wax decoration phase.

Given this context of coherence and uniformity we can postulate that this third phase marked a point of radical transformation of the decorative scheme of the interior of the building. As already described in the previous report, an exception was noted in the plaster of the first tier of the north conch, used for the flat painted plaster surrounding and beneath the niches. Although applied during the third decorative phase, it proved atypical in composition.

Physically, the surface of this plaster appears smooth and fine-grained. Upon closer inspection it proves to contain a finer sand with more irregular grains[7].

Paint layer

Our experience with the plaster also proved true with regard to the paint layer: the chance to work in the south conch enabled us to examine closely certain features of the execution of the paintings already investigated during earlier missions but in need of further examination.

In the north conch, work was completed on all the surfaces including the granite columns partially painted with white wash and inscriptions (*Figs. 5 and 6)*

[6] De Cesaris and Luzi, Red Monastery

[7] This suggests two possibilities: a) at some point, a long time ago, the ground floor plaster clearly must have deteriorated to a serious extent, prompting the decision to replaster and redecorate; b) during the work on the third phase, precisely because the paintings were on the ground floor and therefore more exposed to religious and ritual activity in the church, it was decided to plaster the lower areas with a denser, more hardwearing plaster.

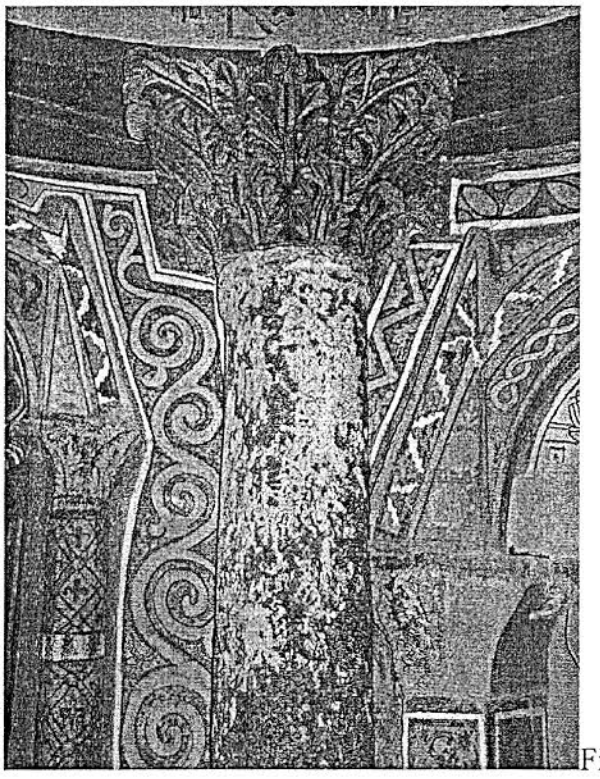
Fig.5

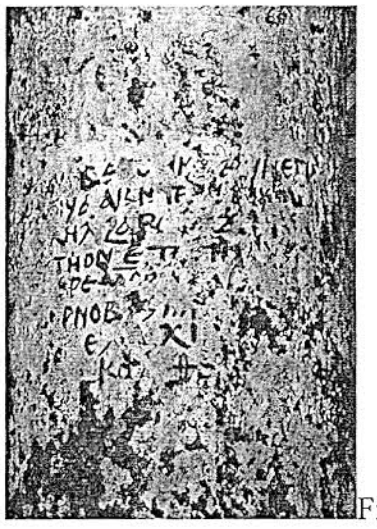
Fig.6

Starting at the top of the south conch, our work covered all the decorated surfaces between the small columns of the clerestory; the whole band decorated with circular geometric designs above the triumphal arch, the sides of the triumphal arch with the circular monochrome design relating to the white wash phase and the figures of an angel (left side) and a saint (right side) linked with the preceding phase of painting; the external arch in its entirety, including the moldings (*Fig. 7)*,

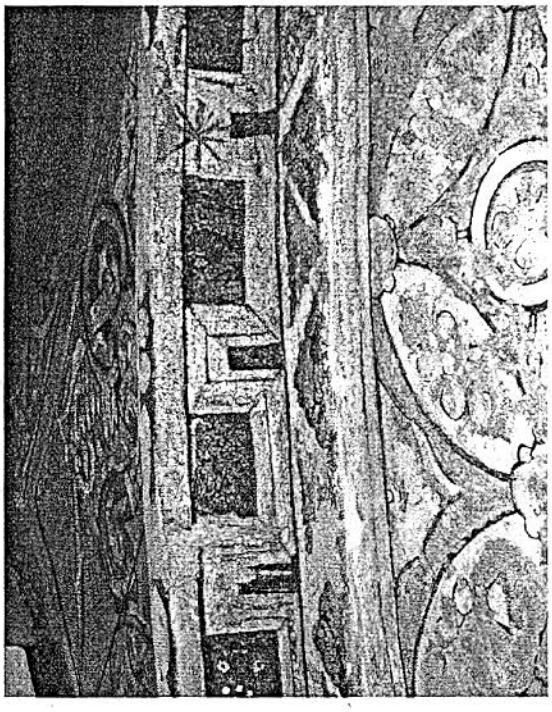

Fig.7

the paintings in the apse apart from the aesthetic treatment of the palimpsest around the halo of Christ and a square left unconserved (to show the original condition of the painting) that will be removed during the next mission. In the second tier we worked on the two central niches, completing the work on the surface of the right-hand one (apart from the saint painted on the inside) and most of the left-hand one. Three test cleanings were then carried out in the left transept, two on the east wall and one on the north wall (*Fig.8)*.

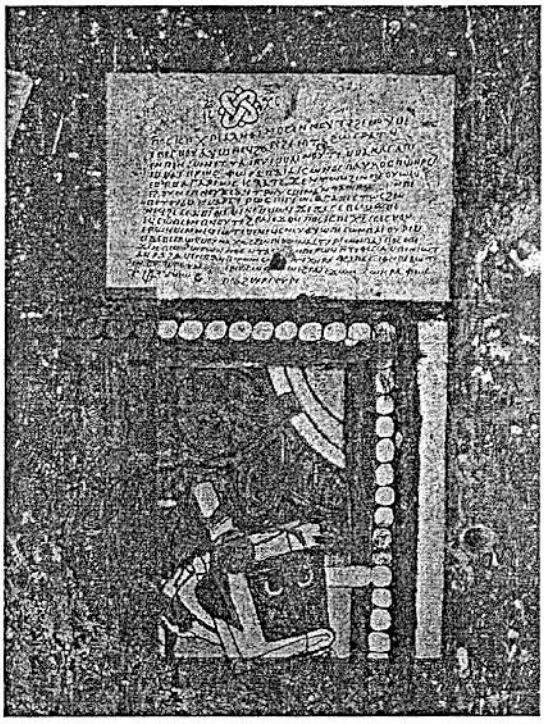

Fig. 8

The latter test cleaning is of particular interest because it was carried out on a painted fragment that does not correlate with the rest of the decorative *corpus* of the church. This piece, measuring approximately 3 meters by 2 meters and depicting a saint on horseback, was actually painted at a period later than the other decorations in the church and, although it does not form part of a new and general decorative scheme, must be placed within a later phase of painting to be added to those encountered to date[8].

During the mission we were able to confirm our findings to date with regard to working methods and recover some significant painted fragments covered with plaster by earlier restorers.

The cleaning process enabled us to see with new clarity the geometric circle pattern of the triumphal arch, on both the original plaster and the fragments reworked by the artist of the fourth phase. Here too, as on the flat areas of painted plaster beside the triumphal arch in

[8]This phase of painting will be examined in greater depth during future missions. However, it is already possible to predict that the saint on horseback depicted on the north wall of the transept will prove to be part of a decorative scheme probably dating from the 13th century. The test cleaning also involved a Coptic inscription from which we will be able to deduce information of great relevance to the dating and interpretation of the painting.

the north conch, we were able to recover small anthropomorphic figures associated with the phase of painting preceding the *Virgo Lactans.*

The angel bearing the symbols of the Eucharist (*Fig.9)* is particularly clear

Fig.9

and the recovery of the face in its entirety is of particular significance. Apart from the evangelist in the clerestory of the north conch, this is the only example of a well-preserved face relating to the third phase of painting (*Fig10).*

Fig.10

The figure's fine state of preservation is owing to the almost total loss of the white wash decoration that covered it in the past. Subsequently, the portraits of two saints were discovered at the base of the external arch. These small figures, connected with the phase of the white wash artist, were painted at the base of the triumphal arch, on the left and right respectively (*Figs. 11 and 12).*

Fig.11

Fig.12

With regard to working methods for the paintings in the apse, we can here confirm our observations relating to the north apse, which we will summarize below.

Although we are aware of the existence of other underlying phases of painting[9] in this apse, the palimpsest is particularly eloquent with regard to the two most recent paint layers.

[9] On the underside of the arch, in the areas where much of the plaster has fallen off, parts of the decoration with plant and geometric motifs attributable to the first phase of painting are still visible.

There is actually evidence of the preceding phase of painting (third phase) in the area where the white wash has fallen off and the details revealed suggest some elements which might explain certain features of the iconography.

Approximately thirty centimeters to the right and left of the Pantocrator's halo, there are two horizontal bands of yellow on which are depicted pointed trees bearing apples painted using the encaustic technique (*Figs. 13 and 14).*

Fig.13

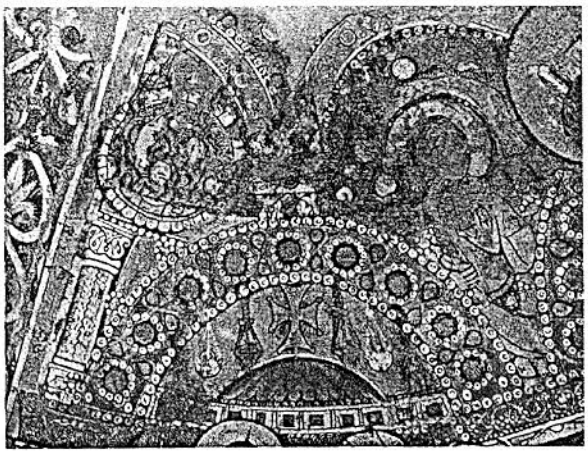

Fig.14

In the area around the faces of the evangelists where the whitewash has fallen

off there are glimpses on the left and right of a different underlying architectural motif with ornate curvilinear elements. There are designs composed of red and white lines at the level of the lower part of the evangelists' robes, one of which is reminiscent of a goblet (*Fig.15).*

Fig. 15

In the area below, at the height of the column bases, there are traces of horizontal lines, probably intended to suggest architectural divisions [*possibly courses of stonework?- Trs.*]

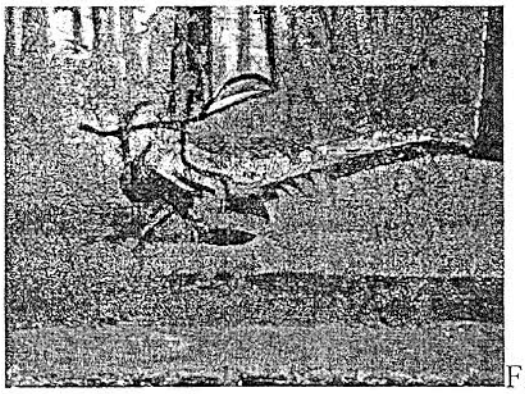

Fig.16

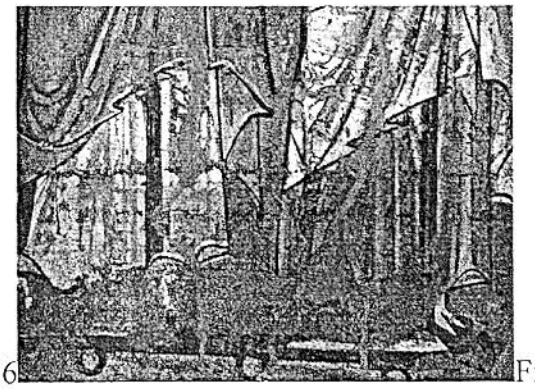

Fig.17

Over the cycle of the third phase was painted the cycle of painting visible today, depicting the benedictory Christ enthroned and flanked by the evangelists.

As we described comprehensively in our earlier reports, the painter did not think it necessary to apply a new layer of plaster as he could count on the properties of the **white wash** as a preparatory coating applied directly to the existing paint layer. A layer between 0.5 and 1 mm thick was applied to the entire surface.

There does not appear to be a systematic method of transposing either the architectural design or the outline of the **preparatory drawing** of the figures to the painted space. Presumably the painter executed a faint preparatory drawing using a brush and the same colors subsequently used in the painting. It is most likely that the painter made use of the covering properties of the white wash and built up the image from successive overlapping phases instead of executing the entire composition systematically from the start. In the absence of a **systematic** preparatory design, it is possible that the painter did the architectural layout at one time, right down to the details, and inserted some figurative subjects at a later stage[10]. As we have already seen in the apse of the *Virgo Lactans*, this working method is particularly clear in the case of the painted columns: these were completed, right down to the black outlining, and only then were the figures of the saints positioned on the painted surface. Furthermore, at the center of each column a black sinusoidal line marking the axis of the column is visible beneath the figures of the saints.

[10] One detail differentiating the decoration of the north apse from that of the south is that the figure of the Pantocrator in the south apse was painted level with a pre-existing figure of Christ with the same iconographic features and the same dimensions and position. Although, in the north dome, the subject of the previous painted palimpsest (third phase) is probably similar to that visible today but with the figure of the Madonna and child about 40 cm lower down, in the south dome the two phases of painting of the enthroned Christ are superimposed, in some places almost exactly.

Fig. 18

The function of this line (*Fig.18)* may have been decorative or to indicate where the figures should be positioned. Features of this kind reflect the artist's awareness that the completed areas beneath the saints would not show through owing to the covering properties of the *whitewash* and the painting itself. The characteristics of this kind of painting allow the artist additional scope as regards changing the figurative composition during the painting process. The **process of painting** can be reconstructed as follows: some pigments (the white, some yellows, the violet background, the ochre of the architectural features and the red earths of the capitals and column bases) were applied in uniform, clearly defined areas. The draperies and flesh tones which vary from a dominant very light shade to a more ochreous one, were applied using opaque pigments that were then overpainted with a series of fluid, transparent glazes used to define the shadows and three-dimensional constructions. At this point, the painter completed the shading of the flesh tones and draperies using techniques such as the addition of sharper lines in a more opaque color varying between 0.5 and 1.5 cm in thickness. The composition was therefore drawn in again, and in some cases

slightly corrected and refined, using a black line of irregular width which systematically outlined architectural contours and figures, objects and facial features.

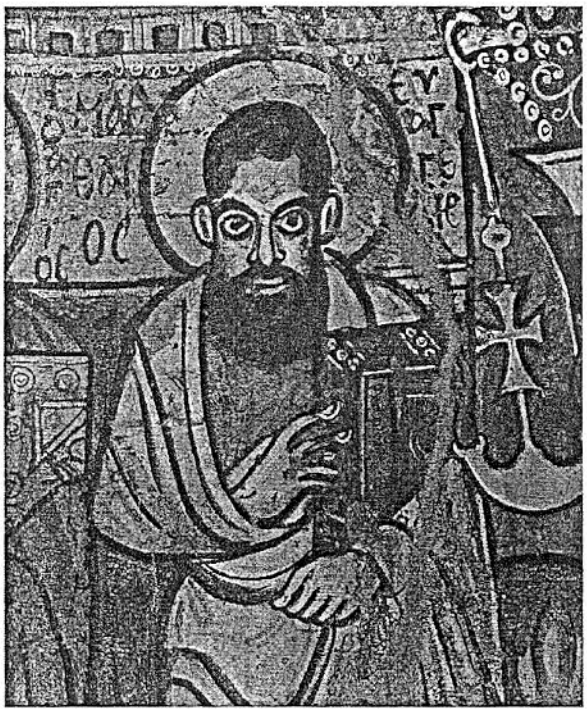

Fig.19

At the same time, the painter used a light pigment for certain decorations and the highlighting of the faces, draperies and anatomical details *(Fig.19)*.

The close examination [of the paintings in the south apse] which has been possible during this mission has shown the working method to be the same as in the north apse. Apart from some simple variations, inversions of color and small differences in the execution of certain details, the scheme of execution is unchanged.

In the second register, the cleaning process has enabled us to recover the decorative geometric elements of the phase of painting known as the wax decoration or third phase. The entire decorative scheme of this register, as well as the opposite conch, with the exception of the saints in the niches, may therefore be traced back to this phase of painting. The fact that in this register, as in the north conch, the painter of the fourth phase only worked inside the niches is enormously important because it constitutes a further confirmation of how the artist only worked in specific areas of the building according to the priorities imposed by the state of conservation prevailing at the time (some of these

icons may already have been partially damaged or blackened by smoke) and new iconographic and decorative choices.

In the north conch, the entire decorative scheme of the first register could be ascribed to the third phase with some portions reworked by the whitewash painter. Some of the latter portions are well preserved, such as the saint on the *protesis* access door *(Apa Teophilos; Fig. 20)*, and some highly fragmented, for example in the niches.


Fig. 20

Down behind the last column on the right, beside the jamb of the *protesis* access door, in an area where the plaster has fallen off, an area of geometric decoration made up of red monochrome diamonds was revealed. Given that this lies below the same plaster used in the third decorative phase, it can be attributed to the first or second phase of painting in the church (*Fig. 21*).

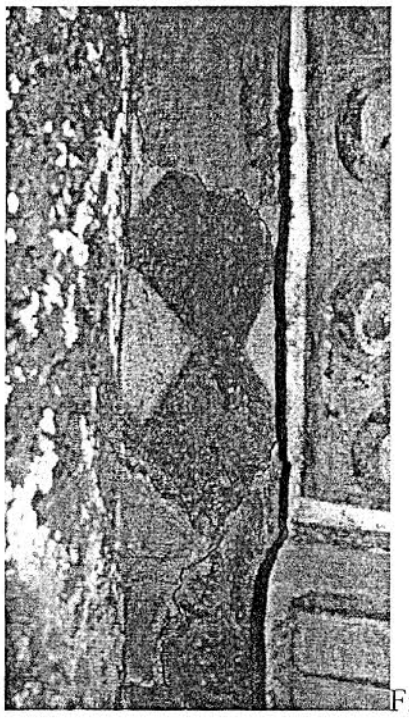
Fig. 21

Third phase of painting (wax decoration artist); working procedure

Information about working methods during the third phase of painting was processed and examined during previous missions; the most recent mission has enabled us largely to confirm our earlier findings. The figurative subjects discovered during this phase of the work – the smallest anthropomorphic figures on the triumphal arch and the small saints in the niches of the first register of the north side –were all initially drawn in green, as described earlier. It seems that the artist then filled in the background areas with color and finished them with a thinner black or reddish brown line.

Another interesting technical fact concerns the yellows described in the previous report.

It seems that a wax-based varnish was applied over the ochre and orpiment pigments used in order to obtain a shiny effect that simulated a gilded surface.

In conclusion, all the fragments of figurative painting painted over by the whitewash artist share the same technical characteristics and were painted on mortar of similar composition.

Fourth phase of painting (whitewash artist); working procedure

The working procedure of the painter of the fourth phase (whitewash) closely follows that described in previous reports based on our experiences in the north conch.

Starting from the top, the horizontal band of decoration with the circular polychrome design over the triumphal arch was painted by tracing the design below which existed in a simplified monochrome version (*Fig. 22*).

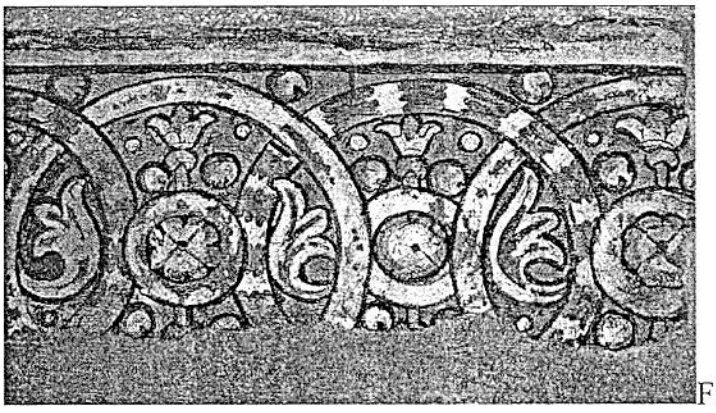
Fig.22

However, the artist covered the figures of the saint and the angel in the triumphal arch with circular decorative motifs. (*Figs. 9 and 23).*

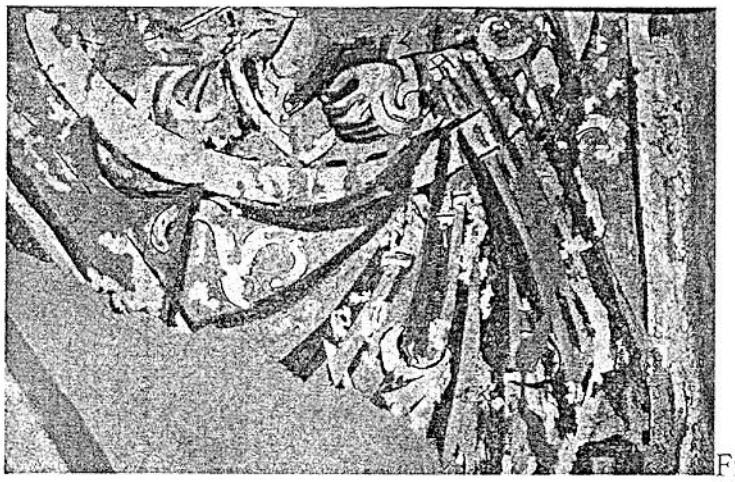
Fig. 23

Inside the apse the painter applied whitewash to the entire decorated surface then painted the representation visible today, making only minimal changes, as stated earlier, to the iconography of the dominant enthroned Christ.

In the second register, the saints represented in the niches were "repainted". Moving to the two niches of the first register in the north conch, as described in the 2005 report, the painter completely altered the iconographic scheme and the dimensions of the figures of the saints, changing them from full-length figures to half-length[11] (*Figs. 24 and 25).*

[11] In the most recent phase of painting, two half-length figures of saints were painted in the niches of the first register of the north lobe, covering a full-length figure which probably depicted the same saint albeit with different dimensions and iconographic features. It is interesting to observe how the painter set out the iconography of the saint in a manner similar to that in the niches of the second register, adding in the upper area an additional red horizontal band framing a black rectangular area on which he painted an inscription in white. During the course of the work we were also able to identify some portions, although highly fragmented, of black writing on a white band correlating to the phase of painting below (third phase). In the right hand niche it can be seen that many features of the book held by the saint of the third phase, such as the jewels in green wax, are similar in technical terms to those of the book held by the saint painted in the clerestory in the north lobe. However, it appears that the saint in the left-hand niche, where the remnants of the inscription permit him to be identified as St Athanasius, was not provided with a book in his last iconographic incarnation even though we cannot be completely certain of this given the fragmented nature of the painting. Finally, we should remember the considerations already set out in the 2005 report concerning the relationship between the paintings of the curtains in the second tier of the east lobe and those painted in the two niches of the first tier of the north lobe, now only partially visible:
-both are painted on plaster which is not particularly smooth and has similar characteristics;
-the technique and design of the curtains are highly similar and seem to date from the same time in terms of execution.
In addition to this, the floral decoration of the curtains differ slightly in layout from those in the niches of the east lobe, in that the pattern is set out laterally. This, coupled with the fact that during the work no fragments of encaustic painting were encountered under the figures of the standing saints, suggests that the central area was not decorated in order to accommodate the painting of the saint. It follows therefore that they were painted at the same time.

He then added small anthropomorphic images on portions of wax decoration in the areas between the columns.

Fig.24

Fig. 25

STATE OF PRESERVATION

Analyzing the state of preservation of the plaster of the south conch and the areas above it, we observed that the plaster under the dome and around the triumphal arch was considerably fragmented and failing to adhere in a manner similar to that encountered in the north conch. Old falls of plaster had been repaired with unsuitable mortar which encroaches heavily on the original plaster (*Fig. 26*) and paint layer, as described in detail at the beginning of the report.

Fig.26

In the clerestory an extensive attempt at restoration dating from the time of the *Comité* can be seen.

On both imposts of the triumphal arch there was widespread lack of adherence between the different layers of plaster and between the plaster and the masonry.

The arch, including the limestone moldings, was fractured and cracked and there were many gaps in the plaster (*Fig 27).*

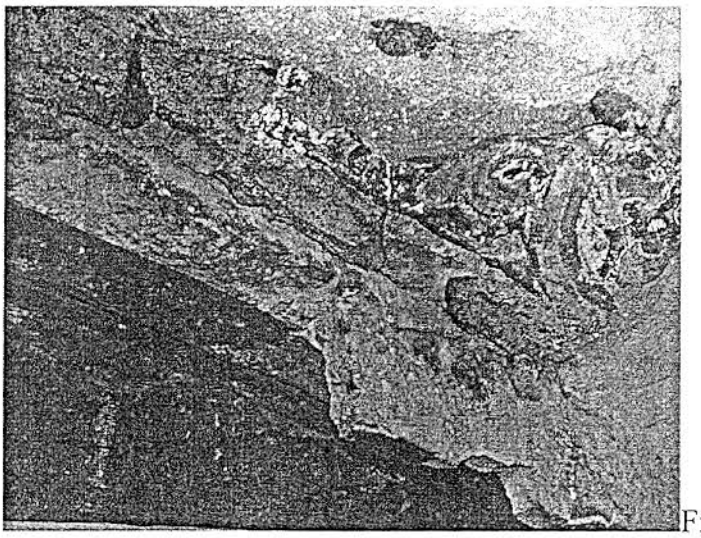

Fig.27

In the second tier, there were many gaps in the plaster where the *Comité* concentrated its work: we are referring here to the plaster under the string course, adjacent to the replacement woodwork.

Following a vertical line downwards from the triumphal arch, there are various cracks *(Fig.28)* testifying to the old problem of structural instability in this area which led the *Comité* to try and reestablish the architectural equilibrium of the building.

Fig.28

The cracks and major areas of instability are matched by an extensive lack of adherence between the plaster layers and the masonry. The state of preservation of the paint layer varies enormously as a result of the factors summarized below.

The technical and compositional characteristics of the materials used: the paint layer currently visible has a series of gaps in

it corresponding to the pigments and binders used in the paint layer beneath. These pigments and binders, owing to their own compositional characteristics, have had an adverse effect over time upon the adhesion of the overlying paint layer (the upper part of the south apse which revealed the line of trees associated with the third phase of painting, the right and left of the triumphal arch, the ground level niches in the north conch) *(Figs.13, 14; 24, 25)* .

- Water entering through cracks has produced several areas of saline efflorescence on the painted surface, in particular in the area above the triumphal arch.
- Human intervention and attempts at cleaning: the central part of the apse has suffered most from the effects of previous attempts at cleaning. Evidence of drastic mechanical cleaning with scalpels is visible on almost all the white backgrounds of the wax decoration in the first and second tiers.

It would be useful at this point to analyze in detail some of the restoration work observed in different areas.

The paintings in the apse and the paintings inside the niches of the first and second tiers were the object of conservation work that can only be dated roughly to some time during the twentieth century. These surfaces are coated with a thick layer of heavily oxidized[12] oil- and resin-based varnish beneath which can be seen some touches of red-brown and more rarely, gray-green. The black outlining of the figures has been roughly yet systematically painted in over the varnish[13] *(Figs. 29 and 30)*.

[12] A. Luzi, L. De Cesaris, Red Monastery

[13] Essentially in the north apse which was also the subject of work to consolidate and brighten up the paintings and repaint the outlines of the figures. In the south apse there are signs of the attempt to clean the surfaces which profoundly altered the state of preservation of the paintings in this area.

Fig.29

Fig.30

Cleaning work carried out on the figure of Christ enthroned has proved ruinous in its effects. Clearly, vigorous mechanical cleaning[14] was attempted with disastrous results, particularly with regard to the body of Christ, causing deep abrasions and detaching the painted layer and white wash. These efforts were concentrated in particular on the central area around the benedictory hand[15] of Christ and the halo. Here, the individual carrying out the work, thinking that he was

[14] Presumably abrasive sponges soaked in water and oil-based solvents were used in this area.
[15] The remains of insect nests were found in this area which go some way towards explaining the vigour of this attempt at cleaning.

uncovering the remains of a crown on the head of Christ, was in fact revealing part of the capital painted under the halo[16] *(Fig.31)*.

Fig.31

The capital was actually part of the first phase of composition that the painter most probably intended to cover with a light coat of whitewash in order to paint the central figure

[16] The most recent painting of Christ's halo has been almost entirely lost. The halo visible today is part of the previous cycle of painting, the third or wax decoration phase.

over it, in this case, the enthroned Christ[17]. Extensive touching up then took place.

During the cleaning process an old layer of dirt essentially made up of carbon deposits became visible, together with a general discoloration of the surface around the cracks which can be associated with a few one-off attempts to repair the gaps.

Over all the other painted surfaces the layer of dirt appeared to be made up of natural deposits, such as residual particulate matter and carbon, as well as a great deal of wax residue from candles arising from the building's religious function. This continuous layer of dirt is most evident in the first tier to a height of approximately 1.80 m above ground level, as a result of direct exposure to oil lamps and candles as well as the hands of the congregation. It should be added that the entire area to head height was that most heavily targeted in the cleaning operations carried out by different bodies. These past attempts at conservation have irremediably damaged the appearance of many parts of the first tier, the most obvious examples being the two niches on the north side. In the left-hand niche only traces of the last painted layer remain, hinting at the outlines of the images beneath. The right-hand niche, however, has lost nearly all its white wash apart from on part of the beard and the halo, revealing the earliest painting almost in its entirety *(Figs. 24 and 25)*.

The woodwork in our area of operations was completely replaced by the *Comité* as in the north conch. All the brackets and woodwork are painted red.

WORK CARRIED OUT

[17] As we saw in the paragraph describing the working methods for the fourth or *Virgo Lactans* phase, it was usual for the artist to work by applying one layer over another, covering details painted previously with a thin layer of whitewash.

Our first task was to remove dust from the surfaces using soft brushes. The repaired areas were identified and pointing was removed mechanically using scalpels and micro-chisels. The restoration work was brought up to the level in those places where the material appeared compatible with the original plaster, taking care to uncover every fragment of concealed plaster and paint layer and therefore cleaning and aesthetically treating them in the process. As in the north conch, this work was carried out extensively in the area where much plaster is missing beneath the dome.

In order to restore the large gaps in the architecture and moldings we inserted fiberglass-reinforced plastic rods in the masonry and strung copper wire appropriately treated with acrylic resin between them *(Fig.32)*.

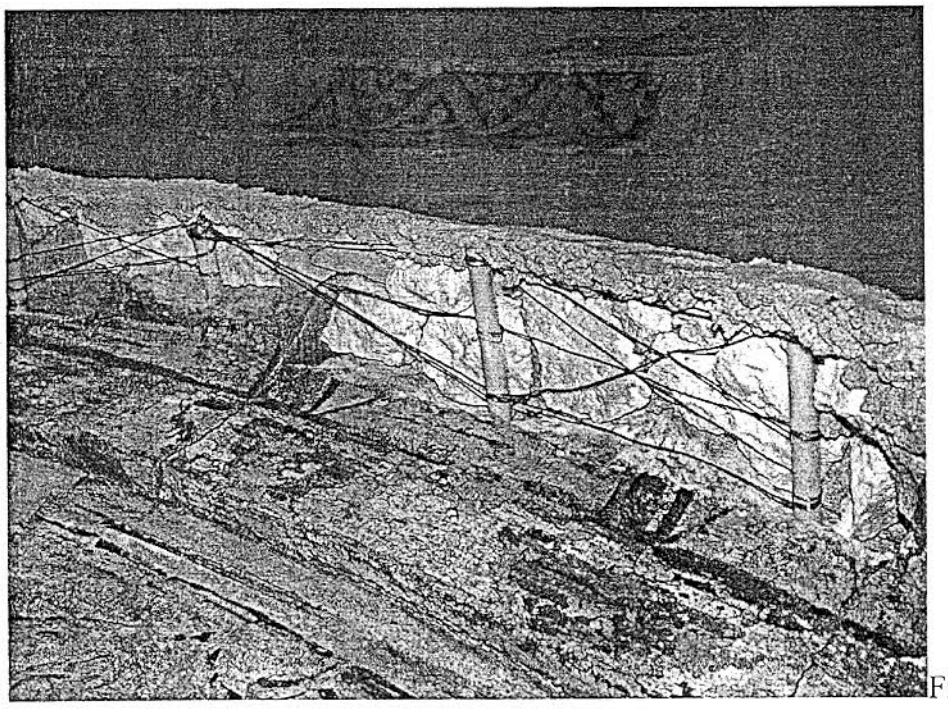

Fig.32

This was necessary to ensure that the mortar used in the repairs would adhere over the long term. This mortar was applied in layers, using coarser grained mortar first and thinner mortar on the surface.

The area was consolidated by means of injections of liquid mortar similar in composition to the original plaster.

In some cases we had to anchor the edges of the plaster by means of injections, into clearly defined areas, of acrylic resin in a 35% emulsion (acryl 33). We took preventative measures to strengthen some areas using small strips of Japanese paper stuck to the surface with an acrylic resin solution.

We pointed the cracks and edges of the plaster where this was necessary to prevent the liquid mortar from leaking out or provide a further immediate support in the areas where the plaster was not adhering. Where the painted palimpsest was not visible beneath them, the cracks and gaps in the plaster were brought up to the level using mortar similar in composition and appearance to the original but with less mechanical resistance *(Fig.)* [number missing – Trs.]. The structural instability affecting the vault of the apse required the use of epoxy resin, given the urgent need to consolidate this effectively *(Fig.)* [number missing – Trs.].

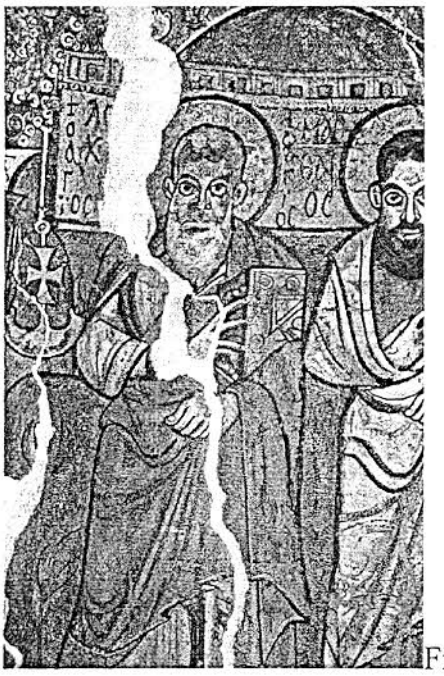
Fig.33

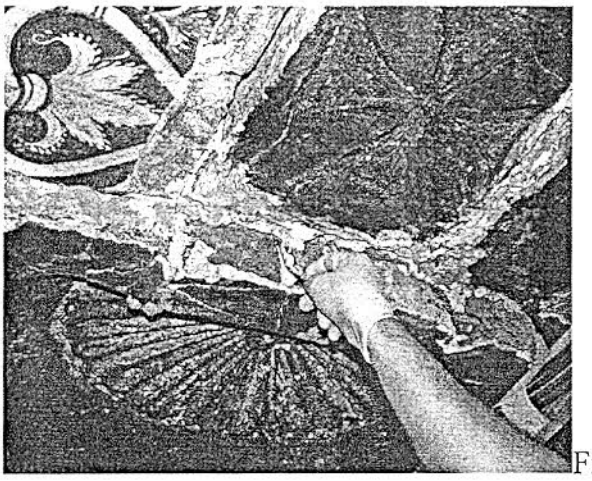
Fig.34

The paint layer was consolidated by means of injections of an emulsion of acrylic resin. In some cases we had to apply light pressure using a flexible spatula, interposing a sheet of polyethylene between the spatula and the painted surface.

In places where the paint layer was not adhering, it was consolidated by applying a low-percentage solution of acrylic resin with a brush.

We employed the methods and materials used during the 2003 mission to clean the paint layer. The cleaning system developed during these missions has proved particularly effective and safe for the constituent materials, reducing mechanical stress on the painted surface (aspiration with organic solvents and the use of compresses to dissolve substances applied over the paint layer) (*Figs. 35 and 36).*


Fig. 35


Fig.36

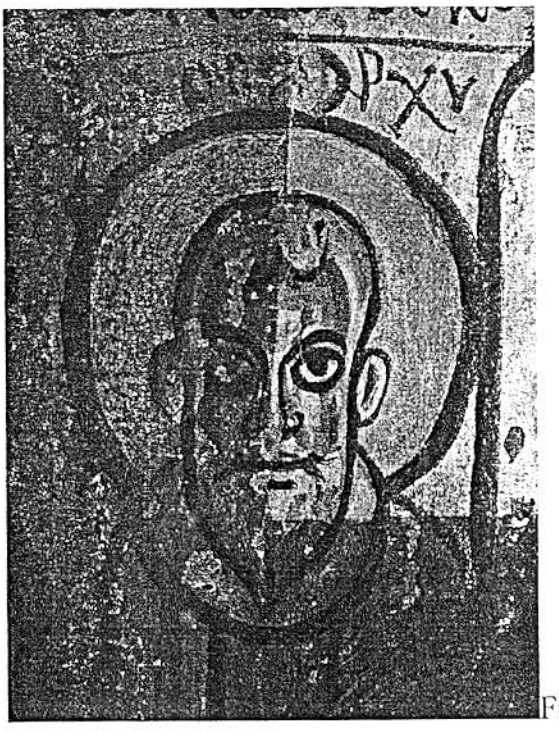
Fig.37

To summarize, we proceeded as follows: removal of covering varnish (oil and resin) (*Fig. 40*) using solvents in rotation (acetone, nitro-thinner and nitro-thinner with the addition of dimethylformamide in the proportions 4:1) applied on single-ply paper tissues until evaporated. After each application, acetone was applied in the same way to encourage evaporation of the solvents used. In some specific cases, where wax residues were present, chlorinated solvents (Trielene, Baltane etc) were used, heated to approximately 45° in a bain marie.

These solvents were never used where the paint layer had a wax binding agent (encaustic technique). The oily residues on the paint layer and areas of repainting were removed using a slightly basic polar solution with a controlled pH (70 g/l ammonium carbonate in distilled water). The solution was applied to the surface using several single-ply paper tissues; contact times varied from 5 to 8 minutes. Carbon deposits, oily residues and thin layers of saline efflorescence were then removed using a slightly basic polar solution (10 drops of ammonia per litre of distilled water) using paper tissues and working on small areas at a time. Thicker saline efflorescences were removed mechanically with scalpels.

In places where there was only a uniform layer of dirt made up of particulate matter and carbon residues, we applied ammonium carbonate (70 g/l in distilled water) with a sponge. Often the black lines around figures, decorative features and inscriptions, traditionally used as a finishing touch in the last phase of painting, were in a particularly delicate state. After

preliminary cleaning and as work progressed, it sometimes proved necessary to fix these lines carefully using a solution of acrylic resin.

In the first tier, where the deposits of wax and grease were particularly thick, we had to alternate the use of slightly basic solutions and chlorinated solvents applied using sponges or compresses.

As a result of this aesthetic treatment, the paintings were easier to discern and the sequence of different paint layers clearer. The gaps in the painted layer were treated using the technique of toning down with watercolors.

This restoration technique enabled us to restore the legibility of the painting without rendering it liable to misinterpretation. The toning down of the gaps was inspired by the original patina visible through the oldest gaps (Fig. 38).

Fig.38

The paint was removed from the woodwork using a mixture of organic solvents (nitro-thinner and acetone) and treated with a disinfestant product.

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